SPEC CPU®2017 Integer Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Cisco Systems

Cisco UCS X210c M6 (Intel Xeon Platinum 8360Y, 2.40GHz)

$SPECrate^{®}2017\_int\_base =$ 498

$SPECrate^{®}2017\_int\_peak =$ Not Run

CPU2017 License: 9019

Test Sponsor: Cisco Systems

Tested by: Cisco Systems

Test Date: Jan-2022

Hardware Availability: Sep-2021

Software Availability: Sep-2021

Benchmark	Copies	Result
500.perlbench_r	144	345
502.gcc_r	144	379
505.mcf_r	144	814
520.omnetpp_r	144	298
523.xalancbmk_r	144	618
525.x264_r	144	1040
531.deepsjeng_r	144	400
541.leela_r	144	387
548.exchange2_r	144	1050
557.xz_r	144	283

SPECrate®2017_int_base (498)

Hardware

CPU Name: Intel Xeon Platinum 8360Y
 Max MHz: 3500
 Nominal: 2400
Enabled: 72 cores, 2 chips, 2 threads/core
Orderable: 1,2 Chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 1.25 MB I+D on chip per core
 L3: 54 MB I+D on chip per chip
 Other: None
Memory: 2 TB (32 x 64 GB 2Rx4 PC4-3200AA-R)
Storage: 1 x 240 GB M.2 SSD SATA
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP3
 5.3.18-57-default
Compiler: C/C++: Version 2021.4.0 of Intel oneAPI DPC++/C++
 Compiler Build 20210924 for Linux;
 Fortran: Version 2021.4.0 of Intel Fortran
 Compiler
 Classic Build 20210910 for Linux;
Parallel: No
Firmware: Version 5.0.1d released Aug-2021
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: OS set to prefer performance at the cost
 of additional power usage

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Cisco Systems

Cisco UCS X210c M6 (Intel Xeon Platinum 8360Y, 2.40GHz)

SPECrate®2017_int_base = 498
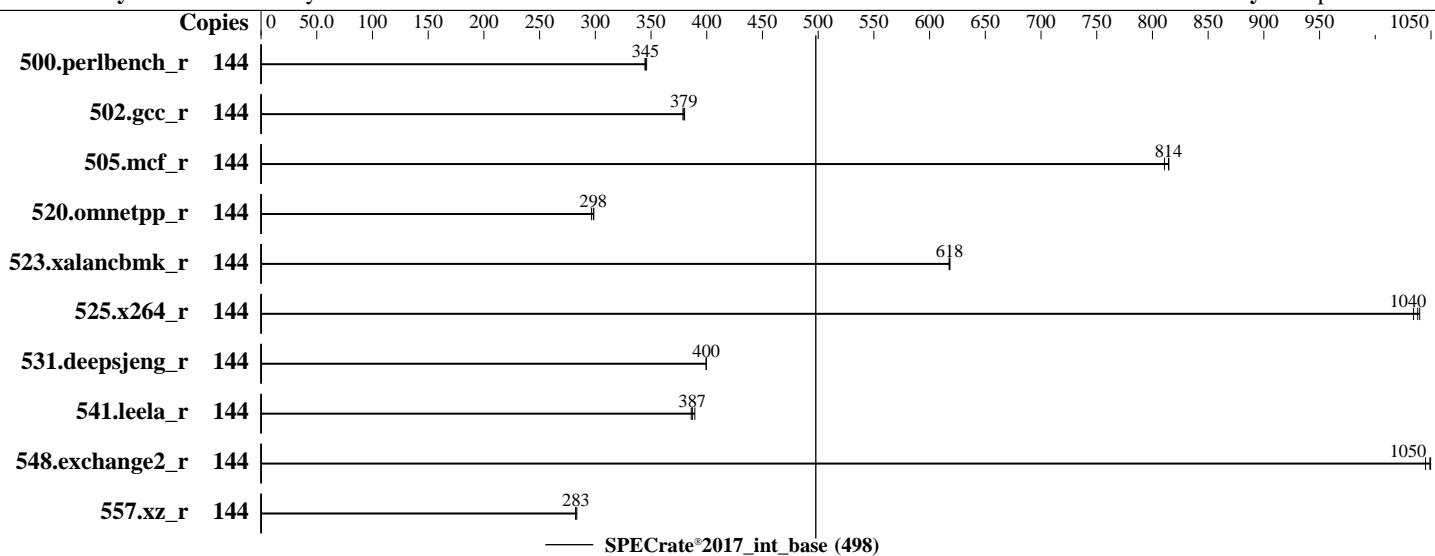
SPECrate®2017_int_peak = Not Run

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Jan-2022
Hardware Availability: Sep-2021
Software Availability: Sep-2021

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	144	**664**	**345**	662	346	665	345							
502.gcc_r	144	536	380	539	379	**537**	**379**							
505.mcf_r	144	286	815	287	811	**286**	**814**							
520.omnetpp_r	144	637	296	**634**	**298**	633	299							
523.xalancbmk_r	144	246	618	**246**	**618**	246	617							
525.x264_r	144	244	1030	**243**	**1040**	242	1040							
531.deepsjeng_r	144	413	400	413	400	**413**	**400**							
541.leela_r	144	**616**	**387**	613	389	618	386							
548.exchange2_r	144	361	1050	**360**	**1050**	359	1050							
557.xz_r	144	551	282	549	283	**550**	**283**							
SPECrate®2017_int_base =		**498**												
SPECrate®2017_int_peak =		**Not Run**												

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/home/intel/tbb/2021.4.0/env/../lib/intel64/gcc4.8:/home/intel/mpi/2021
     .4.0//libfabric/lib:/home/intel/mpi/2021.4.0//lib/release:/home/intel/mp
     i/2021.4.0//lib:/home/intel/compiler/2021.4.0/linux/compiler/lib/intel64
     _lin:/home/intel/compiler/2021.4.0/linux/lib:/home/intel/clck/2021.4.0/l
     ib/intel64:/home/cpu2017/je5.0.1-32"
MALLOC_CONF = "retain:true"
```

General Notes

Binaries compiled on a system with 1x Intel Core i9-7940X CPU + 64GB RAM
memory using openSUSE Leap 15.2
Transparent Huge Pages enabled by default

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Cisco Systems

Cisco UCS X210c M6 (Intel Xeon Platinum 8360Y, 2.40GHz)

SPECrate®2017_int_base =   498

SPECrate®2017_int_peak = Not Run

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Jan-2022
Hardware Availability: Sep-2021
Software Availability: Sep-2021

General Notes (Continued)

```
 Prior to runcpu invocation
 Filesystem page cache synced and cleared with:
 sync; echo 3>        /proc/sys/vm/drop_caches
 runcpu command invoked through numactl i.e.:
 numactl --interleave=all runcpu <etc>
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
```

Platform Notes

```
BIOS Settings:
Adjacent Cache Line Prefetcher set to Disabled
DCU Streamer Prefetch set to Disabled
Sub NUMA Clustering set to Enabled
LLC Dead Line set to Disabled
Memory Refresh Rate set to 1x Refresh
ADDDC Sparing set to Disabled
Patrol Scrub set to Disabled
Processor C6 Report set to Enabled

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
 running on perf-blade1 Wed Jan 26 21:35:22 2022

 SUT (System Under Test) info as seen by some common utilities.
 For more information on this section, see
    https://www.spec.org/cpu2017/Docs/config.html#sysinfo

 From /proc/cpuinfo
    model name : Intel(R) Xeon(R) Platinum 8360Y CPU @ 2.40GHz
       2  "physical id"s (chips)
       144 "processors"
    cores, siblings (Caution: counting these is hw and system dependent. The following
    excerpts from /proc/cpuinfo might not be reliable.  Use with caution.)
       cpu cores : 36
       siblings  : 72
       physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
       25 26 27 28 29 30 31 32 33 34 35
       physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
       25 26 27 28 29 30 31 32 33 34 35

 From lscpu from util-linux 2.36.2:
```

(Continued on next page)

Cisco Systems

Cisco UCS X210c M6 (Intel Xeon Platinum 8360Y, 2.40GHz)

SPECrate®2017_int_base =   498

SPECrate®2017_int_peak = Not Run

CPU2017 License: 9019

Test Sponsor: Cisco Systems

Tested by: Cisco Systems

Test Date: Jan-2022

Hardware Availability: Sep-2021

Software Availability: Sep-2021

Platform Notes (Continued)

```
        Architecture:                    x86_64
        CPU op-mode(s):                  32-bit, 64-bit
        Byte Order:                      Little Endian
        Address sizes:                   46 bits physical, 57 bits virtual
        CPU(s):                          144
        On-line CPU(s) list:             0-143
        Thread(s) per core:              2
        Core(s) per socket:              36
        Socket(s):                       2
        NUMA node(s):                    4
        Vendor ID:                       GenuineIntel
        CPU family:                      6
        Model:                           106
        Model name:                      Intel(R) Xeon(R) Platinum 8360Y CPU @ 2.40GHz
        Stepping:                        6
        CPU MHz:                         3247.215
        CPU max MHz:                     3500.0000
        CPU min MHz:                     800.0000
        BogoMIPS:                        4800.00
        Virtualization:                  VT-x
        L1d cache:                       3.4 MiB
        L1i cache:                       2.3 MiB
        L2 cache:                        90 MiB
        L3 cache:                        108 MiB
        NUMA node0 CPU(s):               0-17,72-89
        NUMA node1 CPU(s):               18-35,90-107
        NUMA node2 CPU(s):               36-53,108-125
        NUMA node3 CPU(s):               54-71,126-143
        Vulnerability Itlb multihit:     Not affected
        Vulnerability L1tf:              Not affected
        Vulnerability Mds:               Not affected
        Vulnerability Meltdown:          Not affected
        Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via
        prctl and seccomp
        Vulnerability Spectre v1:        Mitigation; usercopy/swapgs barriers and __user
        pointer sanitization
        Vulnerability Spectre v2:        Mitigation; Enhanced IBRS, IBPB conditional, RSB
        filling
        Vulnerability Srbds:             Not affected
        Vulnerability Tsx async abort:   Not affected
        Flags:                           fpu vme de pse tsc msr pae mce cx8 apic sep mtrr
        pge mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx
        pdpe1gb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
        nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2
        ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt
        tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault
        epb cat_l3 invpcid_single ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi
```

(Continued on next page)

Cisco Systems

Cisco UCS X210c M6 (Intel Xeon Platinum 8360Y, 2.40GHz)

SPECrate®2017_int_base = 498

SPECrate®2017_int_peak = Not Run

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Jan-2022
Hardware Availability: Sep-2021
Software Availability: Sep-2021

Platform Notes (Continued)

```
     flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms
     invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb
     intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc
     cqm_occup_llc cqm_mbm_total cqm_mbm_local split_lock_detect wbnoinvd dtherm ida arat
     pln pts hwp hwp_act_window hwp_epp hwp_pkg_req avx512vbmi umip pku ospke
     avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq
     la57 rdpid fsrm md_clear pconfig flush_l1d arch_capabilities

  From lscpu --cache:
      NAME ONE-SIZE ALL-SIZE WAYS TYPE          LEVEL  SETS PHY-LINE COHERENCY-SIZE
      L1d       48K     3.4M  12 Data              1    64        1             64
      L1i       32K     2.3M   8 Instruction       1    64        1             64
      L2       1.3M      90M  20 Unified           2  1024        1             64
      L3        54M     108M  12 Unified           3 73728        1             64

  /proc/cpuinfo cache data
     cache size : 55296 KB


  From numactl --hardware
  WARNING: a numactl 'node' might or might not correspond to a physical chip.
    available: 4 nodes (0-3)
    node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 72 73 74 75 76 77 78 79 80 81
    82 83 84 85 86 87 88 89
    node 0 size: 515681 MB
    node 0 free: 515205 MB
    node 1 cpus: 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 90 91 92 93 94 95 96
    97 98 99 100 101 102 103 104 105 106 107
    node 1 size: 516053 MB
    node 1 free: 515704 MB
    node 2 cpus: 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 108 109 110 111 112
    113 114 115 116 117 118 119 120 121 122 123 124 125
    node 2 size: 516087 MB
    node 2 free: 515729 MB
    node 3 cpus: 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 126 127 128 129 130
    131 132 133 134 135 136 137 138 139 140 141 142 143
    node 3 size: 516083 MB
    node 3 free: 515640 MB
    node distances:
    node   0   1   2   3
      0:  10  11  20  20
      1:  11  10  20  20
      2:  20  20  10  11
      3:  20  20  11  10

  From /proc/meminfo
     MemTotal:       2113439268 kB
     HugePages_Total:        0
```

(Continued on next page)

Cisco Systems

Cisco UCS X210c M6 (Intel Xeon Platinum 8360Y, 2.40GHz)

SPECrate®2017_int_base =   498

SPECrate®2017_int_peak = Not Run

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Jan-2022
Hardware Availability: Sep-2021
Software Availability: Sep-2021

Platform Notes (Continued)

```
    Hugepagesize:         2048 kB

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has
    performance

From /etc/*release* /etc/*version*
    os-release:
        NAME="SLES"
        VERSION="15-SP3"
        VERSION_ID="15.3"
        PRETTY_NAME="SUSE Linux Enterprise Server 15 SP3"
        ID="sles"
        ID_LIKE="suse"
        ANSI_COLOR="0;32"
        CPE_NAME="cpe:/o:suse:sles:15:sp3"

uname -a:
    Linux perf-blade1 5.3.18-57-default #1 SMP Wed Apr 28 10:54:41 UTC 2021 (ba3c2e9)
    x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit):                  Not affected
CVE-2018-3620 (L1 Terminal Fault):               Not affected
Microarchitectural Data Sampling:                Not affected
CVE-2017-5754 (Meltdown):                        Not affected
CVE-2018-3639 (Speculative Store Bypass):        Mitigation: Speculative Store
                                                 Bypass disabled via prctl and
                                                 seccomp
CVE-2017-5753 (Spectre variant 1):               Mitigation: usercopy/swapgs
                                                 barriers and __user pointer
                                                 sanitization
CVE-2017-5715 (Spectre variant 2):               Mitigation: Enhanced IBRS, IBPB:
                                                 conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort):         Not affected

 run-level 3 Jan 25 12:46

 SPEC is set to: /home/cpu2017
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda3       xfs   181G   54G  127G  30% /home

 From /sys/devices/virtual/dmi/id
     Vendor:        Cisco Systems Inc
     Product:       UCSX-210C-M6
     Serial:        FCH25057AMV
```

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Cisco Systems

Cisco UCS X210c M6 (Intel Xeon Platinum 8360Y, 2.40GHz)

SPECrate®2017_int_base =   498

SPECrate®2017_int_peak = Not Run

Platform Notes (Continued)

```
 Additional information from dmidecode 3.2 follows.  WARNING: Use caution when you
 interpret this section. The 'dmidecode' program reads system data which is "intended to
 allow hardware to be accurately determined", but the intent may not be met, as there are
 frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.
   Memory:
     32x 0xCE00 M393A8G40AB2-CWE 64 GB 2 rank 3200

 BIOS:
    BIOS Vendor:        Cisco Systems, Inc.
    BIOS Version:       X210M6.5.0.1d.0.0816211754
    BIOS Date:          08/16/2021
    BIOS Revision:      5.22

 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
  C       | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)
          | 525.x264_r(base) 557.xz_r(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2021.4.0 Build 20210924
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
  C++     | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
          | 541.leela_r(base)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2021.4.0 Build 20210924
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
  Fortran | 548.exchange2_r(base)
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on
  Intel(R) 64, Version 2021.4.0 Build 20210910_000000
Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2022 Standard Performance Evaluation Corporation

Cisco Systems

Cisco UCS X210c M6 (Intel Xeon Platinum 8360Y, 2.40GHz)

SPECrate®2017_int_base =   498

SPECrate®2017_int_peak = Not Run

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Jan-2022
Hardware Availability: Sep-2021
Software Availability: Sep-2021

Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifort`

Base Portability Flags

500.perlbench_r: `-DSPEC_LP64 -DSPEC_LINUX_X64`
502.gcc_r: `-DSPEC_LP64`
505.mcf_r: `-DSPEC_LP64`
520.omnetpp_r: `-DSPEC_LP64`
523.xalancbmk_r: `-DSPEC_LP64 -DSPEC_LINUX`
525.x264_r: `-DSPEC_LP64`
531.deepsjeng_r: `-DSPEC_LP64`
541.leela_r: `-DSPEC_LP64`
548.exchange2_r: `-DSPEC_LP64`
557.xz_r: `-DSPEC_LP64`

Base Optimization Flags

C benchmarks:
```
-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc
```

C++ benchmarks:
```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-mbranches-within-32B-boundaries
```

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)   https://www.spec.org/

Cisco Systems

Cisco UCS X210c M6 (Intel Xeon Platinum 8360Y, 2.40GHz)

SPECrate®2017_int_base = 498

SPECrate®2017_int_peak = Not Run

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Jan-2022
Hardware Availability: Sep-2021
Software Availability: Sep-2021

Base Optimization Flags (Continued)

Fortran benchmarks (continued):

```
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc
```

The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.2021-12-22.html
http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.0-ICX-revl.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.2021-12-22.xml
http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.0-ICX-revl.xml

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEC CPU®2017 v1.1.8 on 2022-01-27 00:35:21-0500.
Report generated on 2022-02-15 16:27:00 by CPU2017 PDF formatter v6442.
Originally published on 2022-02-15.